

The Role of the Florida Keys National Marine Sanctuary in the South Florida Ecosystem Restoration Initiative

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Background

The Florida Keys National Marine Sanctuary is administered by the National Oceanic and Atmospheric Administration in the United States Department of Commerce. The Sanctuary is one of twelve national marine sanctuaries that are managed as a system spread throughout the coastal U.S.

The Florida Keys extend approximately 404 km (220 miles) southwest from the southern tip of the Florida peninsula. Located adjacent to the Keys land mass are nationally significant marine environments, including seagrass meadows, mangrove islands, and extensive living coral reefs. These marine environments support rich biological communities possessing extensive conservation, recreational, commercial, ecological, historical, research, educational, and aesthetic values which give this area special national significance. The lure of the Florida Keys has attracted visitors for decades. The clear tropical waters, bountiful resources, and appealing natural environment were among the many fine qualities that attracted visitors to the Keys, in the past.

The National Marine Sanctuary Program has managed segments of the coral reef tract in the Florida Keys since 1975. The Key Largo National Marine Sanctuary was established in 1975 to protect 353 square kilometers (103 square nautical miles) of coral reef habitat stretching along the reef tract from just north of Carysfort Lighthouse to south of Molasses Reef, offshore of the Upper Keys. In 1981, the 18 square kilometer (5.32 square nautical mile) Looe Key National Marine Sanctuary was established to protect the very popular Looe Key Reef located off Big Pine Key in the Lower Keys. These two National Marine Sanctuaries were, and continue to be, managed very intensively. The installation of mooring buoys to protect the reefs from anchor damage, educational programs, research and monitoring programs, and various resource protection programs, including interpretive law enforcement have been concentrated in these two marine protected areas. Since these two Sanctuaries were located offshore, the health of the coral reef resources has been affected by land based sources of pollution and nutrients. Managing these two sites has been like trying to manage islands in the middle of the ecosystem. Obviously, the major threats come from outside the boundaries of the Sanctuaries. In order to be successful at management, an ecosystem approach had to be implemented.

By the late 1980's it became evident that a broader, more holistic approach to protecting and conserving the health of the coral reef resources had to be implemented. Regardless of the intensity in managing small portions of the coral reef tract, Sanctuary Managers were witnessing declines in water quality and the health of corals from a wide range of sources. The more obvious causes of decline were from impacts due to point source discharges, habitat degradation due to development and over-use, and changes in reef fish populations due to over-fishing. Clearly, less obvious sources of decline were affecting the health of the coral reefs and these had to be identified.

Sanctuary Designation

In 1989, mounting threats to the health and ecological future of the coral reef ecosystem in the Florida Keys prompted Congress to take action to protect this fragile natural resource. The threat of oil drilling in the mid to late 1980's off the Florida Keys, combined with reports of deteriorating water quality throughout the region, occurred at the same time scientists were assessing the adverse affects of coral bleaching, the die-off of the long-spined urchin, loss of living coral cover on reefs, a major seagrass die-off, declines in reef fish populations, and the spread of coral diseases. These were topics of major scientific concern, and the focus of several scientific workshops, when three large ships ran aground on the coral reef tract within a brief 18 day period in the fall of 1989. Coincidental as it may seem, it was this final physical insult to the reef that prompted Congress to take action to protect the coral reef ecosystem of the Florida Keys. Although most remember the ship grounding as having triggered Congressional action, it was in fact the cumulative events of environmental degradation, in conjunction with the physical impacts that prompted Congress to take action to protect the coral reef ecosystem of the Florida Keys. On November 16, 1990, President Bush signed into law the Florida Keys National Marine Sanctuary and Protection Act (FKNMS ACT).

The Act designated 9600 square kilometers (2,800 square nautical miles) of coastal waters off the Florida Keys as the Florida Keys National Marine Sanctuary and immediately addressed two major concerns of the residents of the Florida Keys. There was an instant prohibition on any oil drilling, including mineral and hydrocarbon leasing, exploration, development, or production within the Sanctuary. In addition, the legislation prohibited the operation of tank vessels (ships) greater than 50 meters in length in an internationally recognized *Area to Be Avoided* within the boundary of the Sanctuary.

Clearly, the greatest threat to the environment, the natural resources of the Keys, and the Keys' economy has been the degradation of water quality over the past two decades. This has been a major concern for the residents of the Keys for years. Commercial and recreational users of the resources in the Keys, environmentalists, scientists, and resource managers are all in agreement that the water quality of the Keys is in sharp decline and the commercially and recreationally important resources are extremely threatened. Some of the reasons for the decline are believed to be: the lack of fresh water entering Florida Bay; nutrients from domestic wastewater such as shallow-well injection, cess pits, septic tanks, etc.; stormwater runoff containing heavy metals, fertilizers, insecticides, etc.; marinas and live-aboards; poor flushing of canals and embayments; build-up of organic debris along

the shoreline; sedimentation; lack of hurricanes; and environmental changes associated with global climate change and sea-level rise.

Congress recognized the critical role of water quality in maintaining Sanctuary resources when it directed the Administrator of the Environmental Protection Agency, in conjunction with the Governor of the State of Florida and in consultation with the Secretary of Commerce, to develop a comprehensive Water Quality Protection Program for the Sanctuary.

The FKNMS ACT called for the Secretary of Commerce, in consultation with appropriate Federal, State, and local government authorities and with a Sanctuary Advisory Council, to develop a comprehensive management plan and implementing regulations to achieve protection and preservation of living and other resources of the Florida Keys marine environment.

Since approximately 65% of the FKNMS encompasses State waters and numerous State and Federal areas of jurisdiction overlap or lie adjacent to the FKNMS boundary, it was imperative that the planning process for the Sanctuary be an inter/intra-agency effort. Also, due to the high level and diversity of public utilization of the resources in the Florida Keys and the importance of tourism to the economy of the Keys, it was equally important that the public have a strong role in the development of the comprehensive management plan.

The Sanctuary Act called for the public to be a part of the planning process, and that a Sanctuary Advisory Council (SAC) be established to aid in the development of the comprehensive management plan. A 23 member Advisory Council was selected by the Governor of Florida and the Secretary of Commerce. The council consists of members of various user groups; local, State, and Federal agencies; scientists; educators; environmental groups; and private citizens. Over the course of the planning process, numerous public workshops were held to get input from knowledgeable individuals on a wide range of topics that could be implemented in the management of the Sanctuary. Development of the final management plan took six years of comprehensive planning and utilized an integrated approach with all the local, state, and federal agencies, as well as the public through the Sanctuary Advisory Council made up of a wide range of stakeholders.

The final management plan for the Sanctuary contains 10 action plans including: (1) Channel and Reef Marking; (2) Education and Outreach; (3) enforcement; (4) mooring buoy; (5) regulatory; (6) Research and Monitoring; (7) submerged cultural resources; (8) volunteer; (9) water quality; and (10) marine zoning. The marine zoning plan represents a major departure from the traditional management actions in Sanctuaries. The Act mandated that the Sanctuary program “consider temporal and geographical zoning, to ensure protection of sanctuary resources.”

Perspective

Since declining water quality and ocean pollution were identified as the greatest threats to the continued health of the coral reef in the Florida Keys, Congress directed the U.S. Environmental Protection Agency to work with the State of Florida and the National Oceanic and Atmospheric Administration to develop a water quality protection program for the Sanctuary. The planning effort was initiated parallel to the development of the Sanctuary's management plan. Even though the geographic scope or spatial extent managers were considering as important to addressing water quality problems was enormous in both scope and extent area, it was soon learned not to be large enough.

At their first meeting in 1992, the Sanctuary Advisory Council pointed out that the problems affecting water quality in the Keys was not simply derived from the Keys themselves, but from upstream. Upstream was Florida Bay, South Florida, the west coast shelf of Florida and tributaries that drain a vast portion of South Florida. It became quite clear that we had to look well beyond the boundaries of the Sanctuary to address the source of water quality problems affecting the health of the coral reef. But how far should managers look for the source of impacts?

The answer to this question became more clear in 1993, when the US Secretary of the Interior Bruce Babbitt convened a meeting of all the federal resource managers in south Florida. This action initiated the formation of the South Florida Ecosystem Restoration effort that is currently underway. Today, local, state, federal, and tribal interests are all members of the Task Force whose primary objective is to "get the water right in South Florida."

Over the decades many mistakes have been made in the way we manage our fresh water and its' runoff into our estuaries. Today, we are attempting to get the quality, quantity, timing, and distribution of fresh water back into the system so as to resemble its' historic patterns of flow through the built environment and ultimately to the ocean.

The South Florida Ecosystem Restoration Story

This case study will focus on many of the lessons learned along the way in both the Sanctuary planning effort for the Florida Keys National Marine Sanctuary, as well as the South Florida Ecosystem Restoration project. A challenge in an ecosystem management approach is to get resource managers to create a vision that extends well beyond jurisdictional boundaries, both at national and international scales, and establish broader objectives in ecosystem management. Another challenge is to get scientists to re-think their classical definition of an "ecosystem" and apply the same broad vision of the ecosystem system as the managers. Important too, is that managers and scientists alike recognize that human activities are an integral part of ecosystem management and their activities have to be included in an ecosystem management program.

The Ecosystem. “There are no other Everglades in the world. They are, they always have been, one of the unique regions of the earth, remote, never wholly known....It is a river of grass.” Marjory Stoneman Douglas wrote those words about the Everglades in 1947. Since then we have come to realize that the “River of Grass” is part of the much larger South Florida ecosystem.

This ecosystem covers an amazing diversity of landscapes, including: the Upper Chain of Lakes, above Lake Okeechobee which are the headwaters for South Florida; the meandering Kissimmee River, which flows into Lake Okeechobee; the hardwood hummocks where both tropical and temperate species reside; the mangrove forests that line the coast and Florida Keys; all the estuaries that support numerous species of fish and wading birds; all the way to and including the biologically rich coral reefs.

Before efforts were made to drain the South Florida wetlands, the landscape had three key qualities: First, it was extremely flat, with no more than a 20-foot drop in elevation over 100 miles from Lake Okeechobee to Florida Bay. Second, the landscape had varied flora, fauna, and habitats. Finally, and most importantly, the landscape was a rainfall-driven system, characterized by dynamic water storage and sheet flow.

Because of its many natural assets, South Florida attracted people and money, which led to development, agriculture, tourism, and other growth industries. Today over 5 million souls reside in South Florida's east coast alone. This number is expected to triple by 2050 if current trends continue.

The increase in population, combined with increasing development, agriculture, and other human activities is putting all of the South Florida ecosystem in peril. From the headwaters through the Florida Keys, the natural system is being strained as never before.

Urban and suburban areas also face equally severe problems, such as crime, under employment, and water shortages. *This unique natural and human system is in trouble.*

So how did we get here? We funded efforts like the Central and South Florida Project, which both opened the door for urban and agricultural growth and altered the timing and distribution of water through the South Florida ecosystem. In addition we did the following:

- (1) channelized the Kissimmee River
- (2) polluted Lake Okeechobee with agricultural runoff
- (3) damaged our coastal estuaries with excessive freshwater
- (4) brought Florida Bay to the brink of collapse by altering freshwater flows
- (5) introduced harmful exotic plants
- (6) intensified the effects of floods and droughts.

(7) reduced the spatial extent of wetlands by 50%.

(8) and we permitted development to sprawl farther and farther into the natural system.

The collective consequences of these changes have affected all living beings in South Florida — plants, animals, and people. These changes also threaten the well-being of South Florida's multibillion dollar tourism, agricultural, trade, and fishing industries, which are the economic backbone of the region and the state.

Several observations stand out based on what is happening to the South Florida ecosystem: first, South Florida is a holistic, complex system that includes both the natural and the built environment. Second, the quality of life in South Florida is inextricably linked to the health of the natural system. And third, the health of the Everglades and the entire South Florida ecosystem depends on what actions all of us take.

The challenge we face today is to reconcile our human demands with the needs of the South Florida ecosystem. So what is being done to address the problems we face? Over the past 50 years the state and federal governments have been taking actions to stem and reverse the downward trends. Lands and waters have been protected, laws and initiatives have been passed to manage growth and protect the natural environment, and partnerships have been established to restore the ecosystem.

Of particular note are three recent events that have helped create the foundation for the current restoration effort:

- In 1993 the Federal South Florida Ecosystem Restoration Task Force was established through an interagency agreement. This task force has focused primarily on the protection and restoration of natural systems. This group has worked to develop a consistent approach to addressing environmental concerns; to set priorities for federal restoration efforts; and to oversee and evaluate restoration efforts underway.
- In 1994 Governor Chiles established the Governor's Commission for a Sustainable South Florida. The commission has focused on making recommendations for achieving a healthy Everglades ecosystem. It also has formulated strategies to achieve a sustainable economy and quality communities.
- Finally in 1996 Congress passed the Water Resources Development Act. Among its many provisions, four stand out for South Florida:
 - the act formally established the South Florida Ecosystem Restoration Task Force and expanded its membership to include tribal, state, and local governments.
 - the act accelerated the authorization for and funding of critical projects, such as the C&SF Restudy Project.

- it enabled federal and nonfederal partners to share costs (50-50) for projects South Florida restoration projects.

- and the law authorized the task force to address the full scope of restoration, including the interconnections of environment, economy, and society.

Two important premises have emerged from the Governor's Commission and the Task Force work. First, on its present course South Florida is not sustainable. Second, the important relationship between South Florida's environment, economy, and society cannot be ignored. A common vision is emerging from these realizations and from the ongoing restoration efforts. It is a vision of *"a landscape whose health, integrity, and beauty is restored and is nurtured by its interrelationships with South Florida's human communities."*

So what actions do we take? Today we understand much more than we ever have about South Florida and its problems. But in suggesting solutions, we should keep in mind that there is still much to learn about the South Florida ecosystem.

Because there is still much to learn, the ecosystem restoration effort has adopted an *adaptive management* approach that stresses taking action where possible while also continuing to collect data, learn, and plan. More specifically, the restoration effort is stressing the need for:

- systemwide management,
- integrated governance,
- broad-based partnerships,
- public outreach and communication,
- and science-based decision making.

Systemwide management means taking a holistic, systematic approach to address issues regionally, not locally. It means placing an emphasis on obtaining results rather than on developing processes that may never be carried out. And it means searching for long-term, holistic solutions to South Florida problems rather than finding easy, temporary "fixes" to our problems. *Integrated governance* is also critical to creating a shared vision for the restoration effort. Different levels of government need to work together to:

- develop regulations that are based on common sense;
- share funding and cut costs;
- integrate budgets;
- develop cooperative programs that enable action to be taken faster;

- and streamline red tape and other institutional barriers.

Broad-based partnerships are another key element of the restoration effort. Governments also need to work cooperatively with interested parties if we are to solve the problems facing South Florida. Partnerships also are needed between federal, state, local, and tribal governments and other partners:

- to advance a shared vision and commitment and
- to foster the mutual respect and trust needed for the restoration effort.

Public outreach and communication are essential to building support for the restoration effort. With the region's high degree of cultural diversity, communication is needed to:

- connect people in meaningful ways with the effort;
- foster a clear exchange of views, ideas, and information;
- and instill a broad sense of stewardship, ownership, and responsibility for the fate of South Florida.

Finally, sound restoration decisions must be based on science. The results of specific decisions and actions must be monitored to assess the effectiveness of the actions. Relevant scientific data needs to be identified and collected. Predictive ecological and socio-economic models need to be developed to forecast and track trends. Science-based decisions also means coordinating research efforts and making them accountable. In other words, we need to make sure that we get the *best research, at the best price, and delivered on time*.

Additionally, we need to encourage new, creative technology that integrates both human and natural needs.

So how do we attain this vision? Three overarching goals need to be achieved by the South Florida ecosystem restoration effort. We need to *get the water right, restore and enhance the natural system, and transform the built environment*.

Getting the water right means restoring more natural hydrologic functions while also providing adequate water supplies and flood mitigation. To do this we need to address:

- the quantity of water flowing through the ecosystem;
- the quality of water, the timing and duration of water flows and levels;
- and the distribution of water through the system.

More specifically, the restoration effort needs to:

- re-establish the sheet flows that once were common throughout the system;
- restore the natural variations in water flows and levels, without diminishing the region's water supply or flood control;
- and ensure that water supplies are clean enough for their intended use.

Other critical elements in getting the water right include:

- reducing the amount of water lost to tide through stormwater drainage;
- and replacing the system's lost water storage capacity.

The restoration effort's second major goal is restoring, protecting, and enhancing natural areas. Attention needs to be devoted to recovering threatened and endangered species. The physical and biological connections between natural areas need to be reestablished. Many more wetlands and other disappearing habitats need to be permanently set aside and protected.

The diversity and abundance of South Florida's native species needs to be reestablished. And the spread of exotic species, like the melaleuca tree, needs to be stopped and reversed. In addition, the productivity of coastal areas, estuaries, and fisheries needs to be revived:

- coral reefs need to be protected;
- and commercial and recreation interests need to adopt practices that help sustain the natural system.

The third major goal of the restoration effort is to transform the built environment to sustain a prosperous economy, vibrant society, and a healthy natural environment. To achieve this goal the restoration effort needs to address future development and the economy, including agriculture. Fostering sustainable development is key to achieving this goal. Unending urban sprawl needs to be stopped. Land-use decisions need to be compatible with ongoing restoration efforts. Resources should be used efficiently for development. And government programs, incentives, and tax structures need to be modified to support smart development.

A prosperous, diverse, and balanced economy also must be present to restore the ecosystem. Industries like ecotourism need to be supported and promoted. Work also is needed to ensure that the actions of resource-dependent industries are compatible with the restoration effort's goals.

The support of business interests must be secured if the restoration effort's goals are to be achieved. Finally, a prosperous and sustainable agriculture needs to be supported. We need to:

- protect disappearing farmlands;
- promote research and best management practices that improve the sustainability of the agricultural industry;
- and encourage strong markets.

So what is being done to achieve the south Florida ecosystem restoration goals?

Many projects are underway. Some are nearing completion; others will take decades to complete. The following examples illustrate the nature and scale of these efforts.

Performance Indicators and Models. The ecosystem restoration effort also is encouraging the use of *performance indicators and models* to provide direction, feedback, and accountability for all of the projects going on or planned for South Florida. Performance indicators and models will help us keep track of changing hydrologic, ecological, water quality, and socio-economic conditions. They enable agencies to evaluate their performance, and they help the public identify the benefits and costs of the projects.

C & SF Review Study. The *Central and South Florida Project Comprehensive Review Study* is a massive undertaking aimed at assessing how well the C&SF Project is functioning. The *Restudy* will determine what modifications need to be made to the project to restore natural hydrologic conditions in natural areas, while still providing for the other water-related needs of the region. Together with other efforts, it is hoped that the restudy will improve water quality and help restore the historic abundance and diversity of native species.

Water Preserve Areas. Another project underway is the creation of a series of *Water Preserve Areas* along the eastern margin of the Everglades, spanning Miami-Dade, Broward, and Palm Beach Counties. The water preserve areas will consist of an interconnected system of marshlands, reservoirs, and aquifer recharge areas.

These areas are intended to:

- capture, store, and clean excess stormwater now lost to tide;
- protect and conserve wetlands outside the Everglades;
- and provide a buffer between the expanding westward urban development and the Everglades.

Everglades Construction Project. The Everglades Construction Project covers a number of actions that are being taken to:

- improve the quality of runoff discharged from farms into the Everglades;
- capture, store, and clean stormwater runoff that is now lost to tide;
- re-establish sheet flow and increase the quantity of water delivered to the Everglades;
- and decrease excessive freshwater discharges into estuaries.

The project is focusing primarily on building manmade wetlands, improving the canal system, and encouraging the adoption of *best management practices* for agriculture. Sixty-eight federally listed threatened and endangered species, as well as other species of special concern, occur in South Florida.

Multi-species Recovery Plan. To ensure the long-term survival of these species, the U.S. Fish and Wildlife Service is preparing a comprehensive *multi-species recovery plan*. This will be one of the first plans in the nation that meets the needs of multiple species on a regional basis. It will provide a blueprint that agencies can use in their work to restore the South Florida ecosystem.

Eastward Ho! One of the projects underway to transform the built environment is the Eastward Ho! initiative. The purpose of this initiative is to redirect growth back to the historical eastern corridor and away from natural and agricultural areas. To redirect growth federal, state, local, and private entities are looking at ways to enhance the appeal of older urban areas. It is hoped that Eastward Ho! will both raise the quality of life in urban centers and reduce the impacts urban areas have on South Florida's natural and agricultural areas.

Florida Keys Carrying Capacity. The Florida Keys has experienced tremendous growth over the past several decades, which in turn has affected many of the Keys' natural resources. In response to these impacts, the U.S. Army Corps of Engineers is directing a carrying capacity analysis for the Keys. Information from the study should enable planners to model different growth scenarios and determine when resource thresholds are being exceeded. This should improve the capability of agencies to plan for and manage future growth on the Keys. The model that comes out of the Keys study may have applicability elsewhere in South Florida and even internationally.

South Dade Land Use / Water Management Planning Project. One area in South Florida which potentially could see much change in upcoming years is the South Dade located between Miami's suburbs and Biscayne National Park.

The project, which entails three separate, but linked components:

- Agricultural and Rural Lands Retention Plan;
- South Biscayne Bay Watershed Management Plan;

— and South Dade Wellfield Study

The results of the planning project will determine the future economic, social, and environmental sustainability for urban and rural Miami-Dade County.

Environmental Impact Statement for Southwest Florida. Southwest Florida is an area experiencing rapid growth and development, as well as many impacts to the natural environment.

The U.S. Army Corps of Engineers and Lee and Collier Counties have agreed in principle to prepare an *environmental impact statement* that will take a holistic view of future development in the region. It will specifically be assessing the impacts of permits issued for development on section 404 of the Clean Water Act.

The EIS should enable the Corps to speed up the processing of development permits. It also should help ensure that the counties and the Corps take a consistent approach to new development, and it may generate new ideas for sustainable development.

So where do we stand? The South Florida ecosystem today is facing many serious problems that directly or indirectly affect all of us. Building on the work that has been done over the past 50 years, we now have a blueprint to restore the ecosystem. We have a *vision and goals* for South Florida. Projects are underway and progress has been made in achieving these ends.

But we have a ways to go. All of us — *businesses, governments, private citizens* — need to continue to support and participate in the restoration effort. Working together, we can achieve our vision. South Florida's fate is in our hands.

So can we afford it? According to the results of the “restudy”, the cost of the restoration effort will be approximately \$7.8 Billion U.S. dollars. Although this cost seems high, the question has to be reversed. Can we afford to not do the restoration? Based on the following economic considerations, the decision is clearly, yes we must make the investment:

- One of 6 U.S. jobs related to the Oceans
- 1995- U.S. Fishing industry - \$20 billion
- 1995-Coastal Tourism - \$54 billion (Beaches are leading destination)
- Recreational fishing - \$30 billion
- Example: Florida Keys National Marine Sanctuary
 - 2.5 million tourist annually
 - stay 13.3 million visitor-days annually

- spend \$1.2 billion dollars annually
- Coastal and marine waters support 28.3 million jobs
- U.S. Coastal Areas destination for 180 million yearly

Lessons Learned

The following is a list of “lessons learned” as they relate to ecosystem management planning for the Florida Keys National Marine Sanctuary. Their inclusion does not mean to imply they were not considered from the outset, but only to emphasize their importance to managers. They are as follows:

Ecosystem Approach

- Establish a comprehensive boundary for the ecosystem based on natural and physical processes and not political or jurisdictional boundaries (barriers). Strive to eliminate jurisdictional and administrative barriers to ecosystem management.
- Apply the principles of ecosystem based management from the outset in the planning process. In other words, approach the planning process with an ecosystem perspective, focusing on watershed based management. Include the appropriate spatial extent within the boundary of the ecosystem.
- Use a public process to establish ecosystem management objectives and restoration goals based on our best understanding of the concepts of sustainability. Establish an Advisory Group made up of stakeholders and local elected officials, separate from an Interagency Core Group to assist in the planning process.
- Utilize an adaptive management process and in the absence of information, use the best science available upon which to base decisions.
- Planning process must be supported with analytical and technical expertise.

Integrated Management

- Establish an integrated planning process but do not let the rigor of the process dominate the activities, but rather treat the process as another adaptive management tool. Utilize to the extent possible, existing integrated coastal management programs
- Bring all levels of government to the table for the planning process, from the local and regional level to the state, territorial, tribal and national. Consult international levels of

government when feasible and necessary. Insure the integrated planning process moves vertically and horizontally through the structure of the agencies and all levels of government can participate in the planning process.

- Require that participating representatives have adequate authority to make decisions in the planning process.
- Focus on ways to implement effective ocean governance within the confines of existing authorities, but be open to new legislation when necessary.

Socioeconomic Considerations

- Recognize from the outset that humans are a part of the ecosystem and that our activities, or the affects of our activities, cannot be separated from any holistic approach to management.
- Although we continue to struggle with a true definition of sustainability, continue to apply the spirit of what we collectively think as a sustainable approach on the most conservative side of management principles.
- Invest heavily in outreach efforts at all target audience levels with the recognition that the environment and economy are linked at the outset of the project. This is especially true of decision and policy-maker audiences.
- It is absolutely essential to bring socioeconomic information into the planning process as a foundation for informed participation at an early phase. Treat this discipline with the level of importance that you would give the natural or physical sciences.
- Utilize the concept of marine zoning in the management planning process. This management tool is useful to eliminate or lessen visitor-use conflicts. Establish marines reserves or “no take areas” where marine life is fully protected in critical marine environments.
- Listen to, and attempt to understand all points of view in an ecosystem management planning process.

Conclusion

The list of “lessons learned” is more accurately the reflection of changing spatial perspectives. Clearly, the old paradigm of managing just within the boundaries of one’s marine protected area does not and cannot succeed. It is critical that resource managers step back and take a broader perspective of the true spatial extent of the geographic and oceanographic boundaries that affect their areas. That’s the easy step..... the next is to work with others in an integrated process that focuses on achieving sustainable goals.

Credit

The sections of this report that discuss the South Florida Ecosystem Restoration Project was for a large part written through a facilitated process by members of the Working Group that supports the South Florida Ecosystem Restoration Task Force. This Working Group is made up of local, state, federal, and tribal representatives. This collaborative process makes this an even more powerful message.